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REPORT

ON THE

AGRICULTURAL DEPARTMENT,

GRENADA,

FOR THE YEAR

1938.

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STAFF.

Appointment.	Name.	Date of first Appointment.
Agricultural Superintendent ...	W. O'Brien Donovan ...	1. 6. 1915
Do. Assistant and Land Officer, Carriacou ...	F. A. Simmons ...	11. 6. 1930
Agricultural Assistant ...	W. H. Hagley ...	1. 2. 1934
Do. Do. ...	St. George Cooper, Dip. Agr. (I.C.T.A.), A.I.C.T.A. ...	2. 8. 1936
Do. Do. ...	Clarence Munro ...	1. 1. 1936
Junior Do. ...	Egerton Hamilton ...	8. 11. 1937
Clerk ...	Nelson H. Buxo ...	18. 1. 1938
Foreman, Botanic Gardens ...	Rupert Bell ...	1. 4. 1938

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REPORT ON THE AGRICULTURAL DEPARTMENT, GRENADA.

FOR THE YEAR 1938.

1.—AGRICULTURAL INDUSTRIES.

During the period under review Agriculture was depressed owing to the continued low world prices for the staple crops of the colony, and cultural practices which were some years ago regarded as necessary routine had to be further curtailed.

2. The value of the total Agricultural exports for the past three years were :—

Year.	Value of Exports.
1936	£ 258,476
1937	362,075
1938	271,727

3. Cacao heads the list for 1938 with a value of £126,920; spices (nutmegs, mace, etc.) come next at £113,845; then bananas and lime oil at £11,134 and £9,735 respectively.

Quantity and Value of Agricultural Exports.

Article	1938.		1937.		1936.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
Cacao ...	85,376 cwt.	£ 126,920	64,265 cwt.	£ 160,030	78,636 cwt.	£ 123,616
Nutmegs & Mace ...	46,023 ,,	113,845	45,607 ,,	167,159	32,925 ,,	103,694
Limes & Lime Products ...	...	10,311	...	6,513	...	6,459
Cotton ...	...	3,864	...	4,982	...	5,866
Bananas ...	106,426 stms.	11,134	151,610 stms.	14,650	155,568 stms.	13,238
Other Fruit ...	...	796	...	730	...	496
*Coconuts & Coconut Products ...	1,291,411 No.	1,803	2,019,278 No.	3,780	1,124,390 No.	2,045
Livestock ...	...	2,887	...	2,895	...	2,138
Miscellaneous ...	...	167	...	1,336	...	924
		£ 271,727		£ 362,075		£ 258,476

*Copra has been converted into stems of nuts. i.e. 1 lb. Copra equivalent to three nuts.

Appendix A. supplies more detailed information as to the quantities and values of these exports.

Prices of Major Export Crops.

4. Comparative maxima and minima prices for the last three years are given hereunder :

Product.	Maximum Local Price.			Minimum Local Price.		
	1936. cts.	1937. cts.	1938 cts.	1936. cts.	1937. cts.	1938. cts.
Cacao ...	12½	13½	5	6	4½	4
Nutmegs ...	16	12	7½	10	11	6
Mace ...	32	38	32	24	36	16

Cacao.

5. Prices were depressed during the year and the total value of the year's exports was £126,290. Improved field husbandry in 1937, as the result of the short lived boom prices in that year, reflected itself in increased crop returns in 1938; but with the return to low prices in 1938 both estates and peasants' holdings received less work and attention.

6. Interest was again manifested in cacao regeneration and the majority of planters were pursuing a slow conversion policy with selections from their heaviest strains of cacao.

Nutmegs and Mace.

7. The acreage devoted to this industry was slightly extended during the year under review. Crop production was normal and prices were low.

Sugar Cane.

8. Sustained light showers experienced during the months of low rainfall in 1938 would seem to have been very propitious for the 1937–1938 plant canes. Soil moisture conditions prevailing during this period permitted early stooling and the stands were well established at the onset of the June rains. The Lenten showers, however, seemed to have stimulated excessive tillering of the ratoon crops, and apparently as a result cane growth and incidentally tonnage were adversely affected. Considerable damage was done to many areas in valley bottoms, alluvial flats and along water courses during the heavy rainstorm in October. Besides a heavy lodgement of the canes, considerable loss was experienced in many places due to the excessive amount of debris and silt deposited in the fields.

9. The 1938–1940 plant crop was, owing to abnormally wet weather condition during the months of October and November, late in being sown.

10. 8,563 tons of canes were harvested and bought and 862 tons of sugar were produced. Average tons of cane to a ton of sugar 9·9.

11. Due to the shortness of the crop and in order to satisfy local consumption, the sugar company imported from Barbados 90 tons of refined muscovado sugar.

12. There is still a good demand by the labouring classes for the crude muscovado sugar of peasant manufacture.

13. The Cane experiments were, on the whole, a continuation of those laid down in 1935 and 1936. A new variety trial involving BH 10/12, B 726, B 3013 and B 3127, however, was laid down at Calivigny.

Bananas.

14. Production for the year 1938 is lower than that for the preceding year. It is, however, hoped that the proposed scheme by Government for the establishment in 1939 of collecting centres in peasant areas in rural districts of production, will prove a stimulus to peasants.

15. Particulars of export are subjoined:

Year.	Number of Stems.
1935	56,453
1936	155,568
1937	151,610
1938 ...	106,305

16. The Canadian Banana Company actually purchased 136,279 stems of bananas in the Colony but due to lack of shipping accommodation only 106,305 stems were exported.

17. Statement of bananas bought by the Company during the year:—

	Nines.	Eights.	Sevens.	Totals.	Count Equivalent.
(i)	59,488	35,596	41,184	136,279	89,908

(ii) Count percentage 84.

(iii) Percentage contributed by peasants 4·7.

(iv) Total rejects after Company's inspection 10,135.

18. "Scarring", insect (Frankinella) injury, and "speckling" were responsible for the greater number of the bananas rejected.

Citrus.

19. Lime cultivation was extended in areas of low rainfall. Three lime distilleries were in operation during the year.

20. The average price per barrel for limes, factory delivered, was 4*s*. 2*d*. ranging from 5/- at the beginning of the season to 3/6 towards the close.

21. At the end of the year there were 3,330 lb. of lime oil in the colony.

Minor Industries.

22. The corn and pigeon peas crops were heavy and ground provisions have been plentiful, but there is still need for the production of more home grown food crops for consumption in the island.

23. There has been no scarcity of meat. There appears to be a determined effort on the part of agriculturists to develop poultry rearing and pig husbandry.

24. The home making of coconut oil has assumed comparatively large proportions and hints on keeping the oil clean and sweet have been given to those interested.

25. Progeny of the imported Sussex bull x local cattle have surpassed expectations. The half breeds mature early, beef well and are docile.

26. A satisfactory crop of grapes was obtained in Carriacou from 3 year old vines. 127 lb. were sold locally realizing £6. 1. 5. Retail price was 1/- and 1/2*d* per lb. Reports on the quality were very satisfactory. It has been estimated that birds and other animals were responsible for destruction of 50% of the crop. Indicated yield per acre was 3,000 lb.

27. Clove planting continues by the peasantry in suitable areas and by estates for windbreak purposes.

Pests and Diseases.

28. *Cacao thrips:* thrips of cacao were not serious during the year.

29. *Froghopper* of sugar cane was serious in one or two instances. It was recommended that cyanogas dusting be tried.

30. *Moth Borers:* the Entomologist reports that he has examined doubtful specimens and they are not *Diatrea canella* at all. That being so, the *Amazon Fly*, (Metagonistylum minense) suggests itself as a possible parasite for the control of Diatrea.

31. *Cacao Beetle*: prevalent especially along the western coast. Methods of control: (*a*) trapping and (*b*) collecting.

32. *Mealy Bugs*: this pest in its association with black ant has been reported to be responsible for the damage to cacao cushions in the parish of St. Andrew's and St. Patrick's. Field sanitation and the placing of the trees in as vigorous a condition as possible to withstand attack has been recommended.

33. *Termites*: attacks to cacao trees continue. The blowing in the galleries of Paris Green or Calomel is recommended for control purposes.

34. *Scale insects of citrus*: Green scale, purple scale and snow scale have been general in citrus cultivations. Spraying with oil emulsions have been recommended.

35. *Cercospora* or banana leaf spot was, towards the close of the year, considered serious in certain peasant holdings situate in the eastern and western districts of the island.

36. Stripping and burying of diseased leaves, with a view to control has been carried out at frequent intervals.

37. *Panama* disease of bananas appears to be confined to poor red soils and even here the incidence would not appear to be as intense as heretofore. This condition may, however, be in a large measure due to the reduced plantings in these areas.

38. *Orthezia:* Carriacou has been remarkably free from outbreaks of this and other insect pests on a large scale. Sprayings with sulphemulsol, and the predaceous activities of lady bird beetles and lace winged flies are responsible for their lessened activities.

39. *Cotton Leaf Worm.*—As reported later striking results were obtained in Carriacou by spraying with Paris Green.

Weather and Storm Damage.

40. Weather conditions were somewhat abnormal throughout the year under review. Light and well-distributed showers prevailed during the first half of the year while the second half was unusually wet—with abnormally heavy rainfall during the last quarter.

41. The cacao crop reacted favourably to the lenten showers and, in many instances, estates produced comparatively heavy crops. Bananas on the other hand seemed to be adversely affected by the heavy rains from June to December resulting in lower production and impaired fruit quality.

42. High winds were not, on the whole, prevalent during the year. A heavy "blow" of short duration in the month of June, however, was responsible for considerable damage to bananas and nutmegs in many parts of the island.

43. A heavy rainstorm in October did much damage in the parishes of St. George, St. David and St. John, the heaviest damage being in the parish of St. George.

44. Mt. Gay, Bon Accord, St. George's, Plaisancé, Beaulieu (constituting the basin of the St. John's river) together with Grenville Vale and Beausejour estates suffered severely. The major damage was the result of the St. John's and Beausejour rivers being in spate. On areas below the confluence of these rivers uprooted trees brought down from higher elevations apparently dammed the river in many places, permitting the waters to surge over wide areas. Similar conditions of lesser extent were found in the valley bottoms of Calivigny, Westerhall and Baillies Bacolet.

45. It is believed that the areas permanently and irreparably damaged constitute a small portion of the total area affected and that such damage is confined to slips on steep hillsides and erosion along river courses. Alluvial flats were flooded and covered in many places with heavy deposits of silt and debris, and, with the exception of unharvested crops such as limes and dried coconuts, losses have not been of a serious nature. Such damage is, in the opinion of the Agricultural Department, of a temporary nature and the resultant effect of this form of "mulching" should in turn reflect itself in soil improvement.

46. The assessment of indirect losses to permanent cultivation through leaching and sheet erosion cannot with any reasonable amount of accuracy be determined, nor has any attempt been made to estimate the cost of replacement of such items as estate roads, drains and water power services. Actual agricultural losses in land and crops are estimated to have been:—

St. George's	...	...	£ 2,500
St. David's	...	...	743
St. John's	...	...	8
			£ 3,251

Repairs to public roads and bridges necessitated extraordinary expenditure amounting to £ 9,369 to December 31st, 1938.

II.—WORK OF THE DEPARTMENT.

Staff Duties.

47. The officers of the Department tendered advice and assistance to large and small agriculturists on their holdings in regard to husbandry of crops.

48. Agricultural Assistant Hagley was responsible for field experiment of sugar cane, forest work, banana work, inspection of holdings under the Agricultural Loans Ordinance, Produce inspection and general agricultural advice; Agricultural Assistant Simmons was in charge of all agricultural duties in the Dependency of Carriacou and the St. Vincent-Grenadines; field experiments with cacao and nutmegs, cacao pollination in certain parishes, inspection of holdings under the Agricultural Loans Ordinance, Produce inspection and general agricultural advice was carried out by Agricultural Assistant Cooper; Agricultural Assistant Munro who was permitted to continue his final year at the Imperial College of Tropical Agriculture, did plant disease inspection work, cacao pollination, fruit and vegetable inspection and gave general advice to peasants during his short service. While Mr. Munro was at College his duties were performed by Junior Assistant Hamilton.

49. About the middle of the year Agricultural Assistant Lang, Produce Inspector and Land Settlement Officer was placed in charge of the newly created office of Labour and Land Settlement. The Land Settlement report will from now on be issued from that Department.

Peasant Agriculture.

50. In keeping with the policy of Government and the Board of Agriculture, the betterment of peasant agriculture was the dominant interest of the members of the Staff of the Department, all of whom had specific tasks with this object in view.

51. Foremost attention was given to the continued encouragement of the growth of food crops for home consumption and sale by the peasantry. Their gardens did exceptionally well and there was a good supply of food in the market at all times during the year. Creditable as the position was last year there is still room for a greater local production and for replacement by this means of a proportion of the food imported from abroad at an expense that the local agriculturists find it hard to meet owing to the low prices for their export crops.

52. *In Carriacou.* Experimental plots of yams, black eye peas, sweet potatoes and cassava were laid out. The results will be available for 1939. The black eye peas were a failure, however, as they made prodigious growth with the continuous rains but the bearing was exceedingly poor. Further, this crop is affected to an alarming degree by the grubs of a Cryptorhynchus weevil, practically 80% of the peas in the pods being eaten.

53. 323 lb. of select white yams, 326 lb. of pigeon peas and 71 bundles of cassava cuttings were imported from St. Vincent into Carriacou for seed purposes.

54. Storage of locally grown food crops needs more attention and to give a lead in this matter experiments in the storage of grain were made at the Botanic Gardens; and a cheap East Indian system was successfully demonstrated. The method is being adopted in Grenada and Carriacou.

55. With regard to export crops, the peasants are maintaining the quality of their cocoa and nutmegs, the standard of which has been materially raised since the adoption by Government of the inspection of these commodities prior to export.

56. The response of the peasantry to the propaganda urging a wider planting of bananas under contract to the Canadian Banana Company continues to be very disappointing. Peasant grown bananas amounted to under 5% of the total exports during 1938. It is hoped that Government's provision for purchase in the districts will have a stimulating effect on peasant production of this crop.

57. Special consideration was given during the year to the condition of the Carriacou cotton industry which is of creditable magnitude in relation to the size of the island. Brokers' criticisms of the poor ginning and preparation for marketing show that drastic measures are needed to put the industry on a better footing and a scheme is in course of preparation by Government for bettering conditions. As is shown later in this report, the Agricultural Assistant in Carriacou has carried out an appreciable amount of work during the year with respect to cotton, and he has also worked on the food crops. Assistance is given to the peasantry to control the cotton leaf worm and the following experiment gives striking proof of the value of dusting with Paris Green.

58. *Cotton Leaf Worm:* As a result of a severe attack of Cotton Leaf Worm in Carriacou in 1937, experimental dusting with Paris Green was undertaken on two plots with the following results:

Plot No.	How Treated.	Yield seed cotton per acre.
A	Dusted	1,178 pounds
B	Not dusted	309 ,,

These plots were first ratoon cotton.

59. The results from plant cotton were as follows:

Plot No.	How treated.	Yield seed cotton per acre.
A	Dusted	112 pounds
B	Not dusted	20 ,,

60. A start was made this year in Carriacou, as reported later with plots designed to demonstrate a method for minimizing soil erosion.

61. The rearing of pigs, poultry and other small stock, and their ability to dispose of them for export, enable the peasantry to obtain certain amounts of ready money. Encouragement has been therefore given to animal and poultry husbandry.

62. The activities of a small proprietors' association in St. Andrew prove the value of organization for the purpose of stimulating interest in the improvement of small holdings. A small vote was given by Government to assist this Association. It is hoped that similar Associations will be formed in other parts of the island.

63. *Manurial Experiments with Maize*: The following results were obtained from an experimental plot of maize sown in early June and reaped in October. The rainfall throughout was quite ample.

Plot No.	Treatment.	Yield of Grain per acre in lb.			Mean.	Diff. on Mean.
		Series –I.	Series –II.	Series—III.		
1	No manure	2,380	2,167	1,257	1,935	—
2	Cotton seed meal 1,000 lb. p.a.	2,380	2,371	1,877	2,209	+ 374
3	Pen manure 5 tons per acre	2,593	2,380	1,645	2,206	+ 371
4	Sulp. ammonia 2 cwts. + sulp. of potash ½ cwt.	2,477	1,800	1,277	1,851	–84

Treatment with cotton seed meal resulted in increased yields but there was a decrease in the mean yield of the plots which received artificial manures combining nitrogen and potash.

CACAO, COTTON AND SUGAR CANE INVESTIGATIONS.

Cocoa Experimental Work.

64. The manurial experiments started on large estates at the suggestion of Dr. Pound in 1937 are being prosecuted.

65. The experimental blocks have been regularly visited by Agricultural Assistant Cooper and work on them has been carried out under his direct control and supervision.

66. Where records of natural yields of some plots for two years will not be complete until late in 1939, no detailed report can be given for these areas. In cases where the natural yields for two years have been completed, the subjoined results might prove interesting.

Fertiliser Experiments and Natural Yields.

Station.	No. Trees.	Size Plot.	Manurial Treatment.	Plot No.	Year.	Yield in lbs. Wet Cacao.
Dunfermline	100	⅓ ac.	Natural yields	1	1937-38	1384
				1	38-39	1466
				2	37-38	1301
				2	38-39	1817
				3	37-38	1670
				3	38-39	1881
Mt. Horne ...	100	⅓ ac.	Natural yields. Burnt lime applied at rate of 1 ton per acre in 1938.	1	37-38	896
				1	38-39	466
				2	37-38	779
				2	38-39	410
				3	37-38	676
				3	38-39	313
Dougaldston	100	⅓ ac.	Ground limestone of rate of 2½ tons per acre 1st year. Pen manure at 60 lbs. per tree in 2nd year.	1	37-38	312
				1	38-39	669
				2	37-38	346
				2	38-39	581
				3	37-38	260
				3	38-39	545
Hope ...	100	⅓ ac.	Sulp. potash at rate of 900 lbs. per acre. Applied in July 1938.	1	37-38	559
				1	38-39	530
				2	37-38	580
				2	38-39	452
				3	37-38	542
				3	38-39	634
				4	37-38	561
				4	38-39	641
Pearls ...	100	⅓ ac.	Sulp. potash at rate of 900 lbs. per. acre. Applied in June 1938.	1	37-38	449
				1	38-39	642
				2	37-38	370
				2	38-39	714
				3	37-38	486
				3	38-39	839
				4	37-38	675
				4	38-39	907
Mt. Horne ...	100	⅓ ac.	—	1	37-38	678
				1	38-39	219
				2	37-38	748
				2	38-39	232
				3	37-38	598
				3	38-39	204
				4	37-38	559
				4	38-39	266
Dougaldston	100	⅓ ac.	—	1	1937	342
				1	1938	629
				2	1937	233
				2	1938	306
				3	1937	259
				3	1938	492
				4	1937	217
				4	1938	332

Fertiliser Experiments and Natural Yields (Continued.)

Station.	No. Trees.	Size Plot.	Manurial Treatment.	Plot No.	Year.	Yield in lbs. Wet Cacao.
Plains ...	36	·083 ac.	Basic dressing Nicifos at rate of 600 lb. to acre to all plots.	—	1937–38	371
			Sulphate Potash at rate of 600 lb. per acre—mean yield 4 plots—			
			Lime at rate of 2 tons per acre sulp. potash at 400 lbs. per acre, Pen manure 4 baskets per tree—mean of 4 plots—	—	,,	313
			Lime at rate of 2 tons per acre; Pen manure at 4 baskets per tree–mean of 4 plots—	—	,,	319
			Control—no treatment.	—	,,	314
Dunfermline	241	·80 ac.	Control.	—	1937–38	2737
	187	·62 ,,	800 lb. Superphosphate per acre.	—	,,	2964
	207	·66 ,,	800 lb. Sulp. potash per acre.	—	,,	2627
	218	·66 ,,	800 lb. Super. + 800 lb. Potash per acre.	—	,,	3032
Balthazar ...	50	⅛ ac.	Control.	1	1937–38	340
	,,	,, ,,	Lime, Pen manure, 1 lb. Sulp. potash, 2 lbs. Slag.	2	,,	387
	,,	,, ,,	Lime, Pen manure, 1 lb. Sulp. potash 2 lb. Super.	3	,,	227
	,,	,, ,,	Pen manure, 1 lb. Sulp. potash, 2 lbs. Basic Slag.	4	,,	265
	,,	,, ,,	Pen manure, 1 lb. Sulp. of potash, 2 lbs. Super.	5	,,	394
	,,	,, ,,	Control.	6	,,	313

Balthazar Estate.

67. There are thirteen plots here. Manures were applied at various periods and the yields have been recorded from October 1937 to September 1938. In December of 1938, the owner decided to discontinue these experiments. The following are the yields in lb. wet cacao.

Plot No.	Size of plot.	Treatment.	Year.	Yields.
1	17,080 sq. ft.	Complete manure (600 lb./ac.) Applied February 1937.	1937–38	2,209
2	17,115 ,,	Control.	,,	1,864
3	17,150 ,,	Pen manure.	,,	1,839
4	17,185 ,,	$(NH_4)_2SO_4$ + Super (600/ac.)	,,	1,867
5	17,255 ,,	,, + Sulp. potash (600/ac.)	,,	1,790
6	17,290 ,,	Amophos (600/ac. + Sulp. potash (300/ac.) Applied February 1937.	,,	1,287
7	17,325 ,,	Lime (1937).	,,	1,007
8	17,430 ,,	Lime and pen manure.	,,	1,379
9	17,640 ,,	Amophos (600/ac.) + K_2SO_4 (300/ac.) Applied May 1937.	,,	1,665
10	17,745 ,,	Haynes fertilisers (600/ac.) Applied March 1937.	,,	1,762
11	35,100 ,,	Amophos (600/ac.) + sulp. potash (300/ac.) Applied September 1937.	,,	3,770
12	20,600 ,,	Control.	,,	2,019
13	14,500 ,,	Super (600/ac.) + Sulp. potash (600/ac.) Applied February 1937.	,,	1,027

Cacao Pollination Report by Mr. Cooper.

68. Seventeen trees were selected at Dunfermline Estate and six at Mirebeau Estate for the purpose of carrying out tests of compatibility or incompatibility.

Dunfermline Estate.

69. Reference has been made to the incomplete records available on single tree yields, for selecting the heavy bearers used in the present studies. In March 1938, single tree yield records of the present series were started, and pollination tests carried out whenever flowers were available. The serial tree numbers at Dunfermline Estate are Nos. 5 to 22.

70. The following is a consideration of each individual tree and its performance to date.

71. *Tree No. 5*:—From March to December 1938, 291 pods were harvested from this tree, with a pod value of 11·5 to the pound, a bean content of 35 per pod, bean weight average of 2·8 grams per bean. All figures are average figures based on an analysis of over 100 pods. The tree would appear to be a "continuous setter" as seen by the following monthly harvest yields:—

4th March	...	...	57 pods
28th ,,	...	...	55 ,,
April	...	...	15 ,,
May	...	...	54 ,,
June	...	...	28 ,,
July	...	...	20 ,,
August	...	...	13 ,,
October	...	...	28 ,,
November	...	...	3 ,,
December	...	...	18 ,,

72. *Pollination*:—The general incidence of trunk flowering was very low throughout the whole year and the entire season's crop was borne high up in the branches. Of 3 flowers self-pollinated on this tree, however, all 3 set fruit. Only these 3 flowers were available for pollination throughout the season on the trunk.

The tree occupies a 15" x 15" spacing and produces small to medium thick shelled, warty red pods. The original yield records for this tree cannot be traced.

73. *Tree No. 6*:—Yielded 166 pods from March to December 1938, with a pod value of 11 to the pound. The quality of the bean is, however, not first grade as 40 pods tested gave an average of 41 beans weighing 108 grams or an average single bean weight of 2·6 grams.

74. *Pollination*:—There was little trunk flowering to be seen. Of 13 flowers self pollinated 6 set fruit.

75. *Tree No. 7*:—Only 78 pods were harvested from March to December 1938, with a pod value of 11 to the pound. 57 pods were tested and gave an average of 39 beans weighing 104 grams or an average single bean weight of 2·7 grams. This quality and bearing capacity are not first class.

76. *Pollination*:—There was a good deal of trunk flowers available. Of 43 flowers self pollinated 15 set fruit. Of 8 flowers cross pollinated by what appeared to be self incompatible tree (using this as male parent) 4 set fruit. Towards the close of the year 1938 abnormally excessive rains led to the blackening of every trunk pod and no flowers were available for further work. It is interesting to note, however, that $\frac{1}{4}$ of the total number of pods harvested were the direct result of hand (self) pollination. The results are very suggestive and were it not for the fact that conditions last year were in general inimical to setting, this tree might have been found to be highly self compatible. Some attempt was made to use its pollen on trees which gave no promise of setting with their own pollen, with some degree of success. The results are, however, far from definite, since the number of samples tested were numerically very low.

77. *Tree No 8*:—The original tree broke soon after its selection and yield records for the present tree were started in April. From then till December 1938, 84 pods were harvested with a pod value of $9\frac{1}{2}$ to the pound. 59 pods were tested throughout the period and gave an average number of 34 beans per pod, the average weight of a bean being 3·86 grams, a considerable improvement on the average size Grenada bean. The range for bean number varies from 50 to 9. The trunk pods are very large and average 6 to the ponnd. The beans though large are quite flat.

78. *Pollination*:—There was a moderate amount of trunk flowering throughout the season. Of 30 flowers self pollinated, none set fruit. The period of pollination extended from May to October. Of 17 flowers cross pollinated using Tree No. 7 as the male parent, 8 set fruit. The amount of abscission from this tree was tremendous a day or two after hand pollinations.

79. *Tree No. 9*:—Yielded 125 pods during the period. 86 pods were tested and these gave an average bean content of 41 beans per pod, and an average single bean weight of 2·8 grams. The pod value was 10 to the pound.

80. *Pollination*:—40 flowers were self pollinated with negative results. In several cases selected buds abscissed on opening and even before opening. 7 flowers were cross pollinated using Tree 7 as male parent, and 5 set fruit. Indications of self incompatibility are perhaps shown.

81. *Tree No. 10*:—Yielded 115 pods, with an average bean contents per pod of 42 beans, individual bean weight of 2·4 grams and a pod value of $10\frac{1}{2}$ to the pound.

82. *Pollination*:—There was little trunk flowering and of 10 flowers selfed, 7 set fruit.

83. *Tree No. 11*:—Yielded a total of 186 pods, with average bean content of 39 beans, individual bean weight of 2·74 grams and a pod value of 11 to the pound.

84. *Pollination*:—This tree gave the major portion of its crop in a single month and thereafter, the remaining pods were confined to the branches. Of 3 flowers selfed, 1 set fruit.

85. *Tree No. 12*:—Yielded 221 pods with average of 41 beans per pod, bean weight of 2·8 grams per bean and a pod value of 10 to the pound.

86. *Pollination*:—This tree never flowered on the trunk during the period under review.

87. *Tree No. 13*:—Yielded 154 pods, with 41 beans per pod, 2·5 grams per bean and a pod value of 11 to the pound.

88. *Pollination*:—Trunk flowering was sparse during the period, but of 8 flowers selfed, 6 set fruit.

89. *Tree No. 14*:—44 pods were harvested, with average of 37 beans per pod and the weight of an individual bean 3 grams. Pod value was 11 to the pound.

90. *Pollination*:—The entire crop was a branch crop and no flowers were available for pollination on the trunk.

91. *Tree No. 15*: Yielded 86 pods for the period. The bean number averaged 42 per pod, the bean weight 2·8 grams per bean and the pod value 10 per pound.

92. *Pollination*:—The same remarks apply as in the case of Tree No. 14.

93. *Tree No. 16*:—Yielded 34 pods with 36 beans per pod. The average bean weight was 3 grams and the pod value 11 to the pound.

94. *Pollination*.—Little trunk flowering was available during the entire season and of 4 flowers selfed, 1 set fruit.

95. *Tree No. 17*:—This is a fairly large tree with smooth oval pods. Flowering is very heavy throughout the season. While the surrounding trees were fruiting, it alone was flowering heavily, There were always numerous crawling insects on this tree. For the period, it gave only 44 pods. with a bean content of 42 per pod, a bean weight of 2·9 grams per bean and a pod value of 10 to the pound. The beans, though large, are quite flat.

96. *Pollination*:—No flowers were made to set out of over 50 pollinations.

97. *Trees No. 18–22*:—Trees Nos. 18–22 were selected for the 1938–39 crop year in order to increase the population upon which the present studies are being carried out. Unfortunately, the season opened with a branch crop, the trunk crop having failed through excessive rains. Yield records are being kept of these trees and pollination tests will be carried on as flowers become available.

98. *Mirabeau Estate*:—Two trees were originally selected on this Estate, but later the number was increased to six. Actually, all recent plantings have been and are being made from one particular tree, with a consistently high pod value. Later on, it was felt that a few added heavy bearers should be tested for compatibility or incompatibility. The trees here are designated Nos. 1–6.

99. *Tree No. 1*:—Between February and December 1938, 52 pods were harvested from this tree with a pod value of 7 to the pound, a bean content of 45 per pod and a unit bean weight of $3\frac{1}{2}$ grams.

100. *Pollination*:—The general incidence of flowering was very high on this tree and several flowers were pollinated. Fifty seven flowers were selfed by hand between May and December 1938, with absolutely no result. Every single flower pollinated abscissed a day or two after. In addition 10 flowers were cross pollinated with pollen from Trees 7 at Dunfermline as male, and 4 set. The analysis of these 4 pods are presented:—

Pod No.	Bean No.	Wt of beans.	Pods/Pound.
1	48	190	6
2	26	100	11
3	27	110	10
4	44	175*b*	$6\frac{1}{2}$

101. The tree, though giving a good quality of cacao and a fair bearer, would appear to show signs of self-incompatibility. Work will be again carried out this season on it. No work has been carried out on the remaining trees, because of a lack of available flowers. Their yield however is being kept.

Pollination Report by Mr. Hamilton.

102. Cacao pollination work, which was begun by Mr. Munro, was continued. There were three estates on which this type of work was done *viz.*, Dougaldston, St. John's, Minorca and La Pastora, St. David's.

103. All pollinations were done by hand. Some open, others protected. Protection was done by placing small glass tubes over flowers before opening. When opened and pollinated they were again protected as a safeguard against pollen from other trees. It was found that pollen grains were not available at all times on different trees. On some, morning was the best time for pollinating, while on others, evening work was more satisfactory.

104. *Selection of trees*: At the beginning pollination was done on trees selected by Mr. Munro, but later a few more selections were made at La Pastora. The majority of trees selected were well developed and healthy in appearance. Some were young and others were old but none showed signs of degeneration that called for replacement. Most of the trees selected were of the rek pod type. These seem to possess more desirable qualities than that of the yellow pod type. This, however, will be checked upon as time goes on.

105. *Progress of work*: This work, which was done with a view to determine the compatibility of cacao trees from which good type of seedlings could be raised, could not be pursued as it should have been, due to sparse flowering and adverse weather conditions.

106. For the same reason it was only possible to carry out this work on seven out of nine selected trees at Dougaldston, five out of fourteen at Minorca and four out of six at La Pastora.

107. More often than not pollen grains were found wet and thetefore could not be used. However, frequent visits were paid to selected trees, pollen tested and when available as many flowers as was possible were pollinated. It was due to these frequent and regular visits that any results were obtained.

108. Some of the trees on which pollination work was practicable appeared to be of self-compatibility, while two at Dougaldston, two at Minorca and one at La Pastora seemed to be self-incompatible. Results of the pollination work from October to December on the tested trees are given below. It is hoped, however, that a more definite and detailed account of these trees will be given after the required amount of pollinations have been done.

Result of Cocao pollination tests.

Estate.	Tree No.	Open. No. flowers selfed.	Open. No. Set.	Open. No. Crossed.	Open. No. Set.	Protected. No. flowers selfed.	Protected. No. Set.
Dougaldston ...	A	16	—	20	13	2	—
	B	13	10	6	—	2	2
	C	12	8	—	—	—	—
	D	19	12	—	—	2	1
	E	5	3	—	—	—	—
	G	15	—	—	—	—	—
	P	53	35	—	—	—	—
Minorca ...	L	40	18	—	—	—	—
	M	24	3	—	—	—	—
	K	8	3	—	—	—	—
	V	21	—	16	—	—	—
	R	2	2	—	—	—	—
La Pastora ...	H	10	6	—	—	—	—
	X	7	5	—	—	—	—
	Y	1	1				—
	Z	3	—	—	—	—	—

COTTON.

109. Following on the recommendations of a report made by Mr. J. B. Hutchinson, Cotton Adviser to the Commissioner of Agriculture, after a visit on January 17th to 19th the following works were undertaken.

(1) The determination of the distribution of the brown linted type of cotton G. barbadense, in the cotton fields of the island as a preliminary step to cotton grading.

The result of the 60 counts made from various parts of the island showed that samples from the Grand Bay area averaged 57% of barbadense: Harvey Vale, Belmont and Argyle 29%; the central and leeward areas including Grand Anse, Dumfries, Top Hill and Craigston 12·3%; around Six Roads 8·4% and the Nothern area from Mt. Pleasant and Bogles nearly 15%. As a result of these counts Mr. Hutchinson has recommended the following standard grades to be established:—

Grade 1. Less than 10% barbadense Standard 7%
Grade 11. Containing 11–40% barbadense Standard 30%
Grade 1.11 More than 40% barbadense Standard 75%.

110. (2) *Soil Conservation Experiment on steep slope.* This experiment was laid down according to a plan supplied by Mr. Hutchinson and consists of cotton plots with rows running down the slope as contrasts to plots with rows running across the slope of the land, the plants being spaced at various distances in the row and strip planting of cotton and food crops. All plots are interplanted with food crops. The layout is 5 blocks of 5 plots each distributed at random. The first results will be available for 1939.

111. (3) *Cotton samples forwfarded for spinning tests.* The following samples of cotton grown in Carriacou were roller ginned in St. Vincent and forwarded to the Empire Cotton Growing Corporation for spinning tests.

Sample.	Ginning %.	Lint Length.
Bourbon ...	22·2	39·4 mm.
Barbadense ...	27·9	35·0 ,,
Antilles ...	25·0	45·8 ,,
Antilles H.V. ...	27·6	47·6 ,,

112. The results of the spinning tests are as follows:—

Weight of sample lbs.

EMPIRE COTTON GROWING CORPORATION.

REPORT ON SAMPLE OF COTTON FROM CARRIACOU.

Preliminary Examination.

Reference No. of Sample.	Type of Cotton.	Grade and remarks on Colour.	Length of staple (Fractions of an inch).	Strength of Staple (weak, medium, strong, very strong).	Quality and Character of Staple. (Lustre, fineness, etc.)	Value (Pence per lb.)	Points on or off Futures.	Order of Merit.
X/E 1686	Indigenous West Indian	Good middling, rather high colour	1¼	Strong	Wanting in lustre and fineness	5·69*d*	100 on	
X/E 1687	Do.	Good middling, brown in colour	1⅛	Very strong	Do.	4·94*d*	25 on	
X/E 1688	Do.	Good middling, white in colour	1½ @ 1⅝	Weak to medium	Do.	7·19*d*	250 on	
X/E 1689	Do.	Good middling, creamy colour	1⅜ @ 1½	Medium	Do.	6·19*d*	150 on	

Values Based on: (Futures) December American—4·69*d*.

Values Based on: (Spot) Middling American—5·04*d*.

(Sgd.)

Date. December 8th, 1938.

113. The following extracts are taken from the General Report on the spinning of the samples which was undertaken by the Shirley Institute :

114. "There was little difference between the samples in cleanliness, all being clean.

Spinning Tests: Processing was satisfactory throughout. Antilles H. V. gave a higher comber loss than Antilles and spinning breakages were numerous for Antilles H. V. in 100's.

Results. The twe samples Bourbon and Barbadense were spun to 16's from single roving to enable a direct comparison to be made. The strength tests showed Bourbon much superior to Barbadense, and accordingly Bourbon was also spun to 32's and 40's from double roving, whilst Barbadense was spun to 20's and 26's from single roving. The yarns from both these samples were judged good in appearance, the 16's yarn from Bourbon being considered slightly better than the 16's from Barbadense.

The two Antilles samples were spun to 64's, 80's and 100's combed. In all three counts Antilles gave stronger yarns than Antilles H.V. In appearance, the yarns from the two samples were judged equal in 64's and 100's, but in 80's Antilles was considered slightly better than Antilles H.V. All were classed as good.

With regard to the two Antilles cottons, this type of cotton is often used for soft spun yarns in which strength is not the first consideration. Accordingly the figures given for highest standard count probably bear little relation to the count to which such cotton might be spun commercially.

115. The following remarks on the spinning tests were made by Mr. J. B. Hutchinson, in a report to the Director of Agriculture :

116. "The spinning test are extremely interesting and very important in view of the proposal "to grade the crop in the near future. Dealing first with the Bourbon and Barbadense constituents "of the ordinary Marie Galante mixture, it will be seen that as exported, Bourbon spins very much "better than the Barbadense, the former being estimated fit to spin 35 counts as against only 14 "counts of the latter. Both appear to have spun well and have given yarns of good appearance, so "that it may be taken that both are good marketable cottons of their own particular types if sold "pure. The valuation is extremely interesting. Bourbon is valued at 5.69*d*. or 100 points "on" "middling American, and Barbadense 4.94*d*. or 25 points "on '. Referring new to the ginning percent- "ages supplied by Mr Simmons, it will be seen that the Barbadense type is considerably superior. "Working out the lint value of 100 lb. of seed cotton by multiplying the ginning percentage by the "price per lb., it appears that the Barbadense cotton is worth 138*d*. per 100 lb., as against only "126*d*. per 100 lb. for the Bourbon. It appears therefore that even in the absence of any difference "in yield of seed cotton, the Barbadense is a more profitable type to the peasant than the Bourbon "and no doubt this will become apparent to the cultivators when the two types are graded and "marketed separately. It may seem surprising that when the value of the two types differs com- "paratively little, complaints of the mixing should be so serious but comparison of the spinning "tests results with the valuation makes it clear that each may be a useful cotton for its own purpose "and the difference in sppinning quality may be reflected in only a comparatively small premium, yet "variable mixtures of the two would give entirely unpredictable results in the mill. It is not as "though each bale contained the same proportion of the two types Mr. Simmons' counts show that "the proportion of the two cottons may vary from about 90% Barbadense to pure Bourbon, and it "requires little imagination to visualise the effect of such variations on yarn strength under com- "mercial spinning conditions.

"It may seem a retrograde step to encourage the growing of a lower quality cotton at the "expense of one of higher quality, but I am convinced that it is no function of the Government to "penalise the more profitable cotton simply because it happens to be inferior in spinning value. I "therefore consider that it is right and proper to proceed with the scheme for grading the crop even "if it transpires that a higher price can be paid for seed cotton of the Barbadense type than for that "of the Bourbon type. Since it is the mixture which has given rise to the need for grading, it "seems to me proper for mixed seed cotton to be penalised, and I suggest tentatively for considera- "tion that some scheme might be envolved whereby some at least of the cost of grading scheme be "recovered as a charge on mixed seed cotton. There would then be a definite encouragement to the "peasants to pick the two types separately so that the bulk of the cotton would be marketed pure.

"With regard to the Antilles and Antilles H.V. sample there does not appears to be much that "is new in their behaviour, Antilles having spun much the same as in previous tests. Antilles H.V. is "considerably inferior in spinning value to Antilles, though there is not a corresponding difference in "staple characters. I am always suspicious of a strain which spins lower than would be expected "from its hair characters, and I should therefore be reluctant to recommend distribution of Antilles "H.V. even if on other grounds it could be justified."

Other work with Cotton.

117. Other work undertaken with cotton include (*a*) Selections of white linted Barbadense types which were planted in progeny rows in the Botanic Gardens; (*b*) Crossing of Barbadense with Montserret Sea Island eventually to produce a white linted type with better staple length; (*c*) Planted with the following types which were received from St. Vincent on the recommendation of Mr. Hutchinson. C. 1; R.T.; J.L.S.; M.B.; N.A. 160; N.A. 162; R.T. and J.L.S. which are Barbadense types appeared to be the most promising types from a point of vigour and productivity.

Shipment of Cotton.

118. The Antilles cotton grown on Experiment plots amounted to 3 bales and were shipped to England as ordinary Carriacou cotton, saw ginned. The price realised was 6·05*d*. per lb. for ordinary Carriacou cotton. The nett proceeds paid into the Treasury amounted to £14. 9. 7. The seed sold locally in Carriacou realised £5. 7. 1.

SUGAR CANE.

119. Experiments were continued at Calivigny, Beausejour and Grand Anse estates.

120. Through the courtesy of the Grenada Sugar Factory, Ltd., it has again been possible to supply juice analyses and calculated values of sugar returns per acre of the varieties under test.

121. This Department appreciates the help and facilities extended to it by the management of the various estates during the process of harvesting the experiments.

122. The experiments are, at the moment, confined to variety tests with the four seedlings B.H. 10/12, B 726, B 2935 and M 28. Manurial experiments at Calivigny disclosed that there was no benefit derived by the inclusion of phosphates in the manurial programme. On the contrary, the phosphate plots showed slightly depressed yields when compared with the non-phosphate plots, and on this account have been discontinued.

123. Weather conditions during the year 1937–1938 were somewhat abnormal. A very wet January and moist February (1938) were followed by a late rainy season with very late rainfall. The 1938 plant crop at Grand Anse showed very fine growth during the first three months of the year, but would seem to have made too advanced growth to successfully tide over the dry season which followed.

124. The Manurial treatment of the experiments called for the application of 2 cwts. sulphate of ammonia and 2 cwts. sulphate of potash at mid–January, followed by a further application of sulphate of ammonia at the rate of 3 cwts. per acre at mid–May for plant canes. Both at Calivigny and Beausejour nitrate of potash and pen manure were included in the manurial programme. In each case the individual plots were all treated alike.

125. Yields were extremely poor at Grand Anse where growth was somewhat inhibited by the very low rainfall, which prevailed during the months of May, June, July and August. For this reason neither yields nor juice analyses were taken into account. Calivigny was not so adversely affected by these seasonally low precipitations.

Here the tonnages were on the average 60% of those of the plant crop of the previous year. High ratoon yields were obtained at Beausejour, and this may be accounted for by the neap-tide influence of the embouchure causing irrigation water to circulate through the drains of demarcation, which surround the plots.

126. As a variety cane B 2935 shows itself adaptable to variable conditions of growth. On each of the afore-mentioned estates it has produced heavier yields, both as a plant and a ratoon crop. The juice of the cane, however, does not seem to attain as high a purity as the other varieties under test. The tendency of this cane to split and break under its own weight may be a factor influencing its purity. A fair amount of spoilage is noticed when harvesting the cane.

127. M 28 has not shown the ability to stand up as a ratoon cane. Owing to its early and complete arrowing, followed by a heavy growth of eye shoots, a considerable loss of growth energy would seem to be dissipated in these processes.

128. Neither B.H. 10/12 nor B 726 appears to give the cane yield of B 2935. These two varieties, however, though inferior in field tonnage excel as sugar producers and, as will be noticed in the attached tables, take a smaller number of tons of cane to produce a ton of sugar.

129. B 726 seems to do its best where moist conditions of soil are maintained by an even and well-distributed rainfall, while B.H. 10/12 seems to excel under conditions of ample soil moisture as obtains in alluvial valley bottoms (Beausejour and Woodlands).

130. Little loss due to either insect and animal pest or disease has been noticed. Rat damage has been very slight and apparently less than that of last year.

131. Juice analyses and tonnage returns per acre (calculated) from the experimental plots which are in four replication of one-twentieth acre for each variety may be seen by referring to the attached tables.

In reviewing these tables, it will be noticed that the first three named varieties have done well as ratoons both at Calivigny and Beausejour under somewhat dissimiliar environmental conditions. Cane B 2935 seems to excel in the field by giving heavier yield tonnages than the other varieties, while B 726 has shown itself a superior cane from the point of view of sugar production. From the above it appears that it is slightly advantageous to the grower to plant B 2935 even where the annual rainfall is not a limiting factor on canes B.H. 10/12 and B 726.

132. Cane B 726 may be considered a good factory cane from an all round point of view, viz., its purity, p.c. sucrose, pounds per sugar gallon juice and its optimum fibre content.

CALIVIGNY ESTATE.

Year 1938.

Variety.	Brix.	% Suc.	Purity.	lb. per gn.	Tons cane per ton Sugar.	Tons cane per acre.	Tons sugar per acre.
B.H. 10/12	19·4	17·10	88·14	1·[illegible]5	7·8	(3) 31·35	4·02
B. 726	19·9	17·86	89·75	1·93	7·4	(2) 35·19	4·75
B. 2935	17·5	14·55	83·14	1·56	9·6	(1) 41·25	4·30
M. 28	19·1	16·65	87·17	1·79	8·1	(4) 23·14	2·86

Year 1937.

B.H. 10/12	17·4	14·92	85·75	1·538	9·0	(3) 48·53	5·39
B. 726	16·4	14·17	86·40	1·512	9·5	(2) 56·13	5·91
B. 2935	13·4	10·31	78·70	1·087	14·1	(1) 63·66	4·51
M. 28	16·4	13·95	85·06	1·485	9·7	(4) 47·75	4·91

BEAUSEJOUR ESTATE.

Year 1938.

B.H. 10/12	17·4	14·85	83·34	1·59	9·2	(2) 42·46	4·62
B. 726	18·8	16·78	89·26	1·80	7·8	(3) 38·31	4·91
B. 2935	17·1	14·24	83·27	1·52	9·7	(1) 44·62	4·60
M. 28	17·2	14·34	83·37	1·53	9·6	(4) 28·16	2·93

Year 1937.

B.H. 10/12	16·7	14·37	86·05	1·54	9·4	(2) 45·97	4·88
B. 726	15·3	12·53	81·90	1·33	11·2	(3) 33·62	3·32
B. 2935	15·9	13·39	84·21	1·43	10·2	(1) 55·23	5·22

Produce Inspection.

133. Licensed produce dealers had their premises inspected by officers of the Department prior to their being recommended for licenses.

134. All cacao for export was inspected. The grade, despite low prevailing prices, has been well maintained.

135. Nutmegs for the United States were inspected and in no case did offerings for this market exceed the 10% adulteration limit of the U.S. Department of Agriculture.

136. All fruit and vegetables exported to Trinidad were inspected at point of shipment and certified that they and their containers were free from leaf material, trash and soil.

Live Stock.

137. The British Alpine stud goat, property of the Government was sold to private enterprise. A condition of the sale was that the service fee be reduced from 4/2 to 2/-.

138. Two Zebu bulls in which the Government bore half-cost were imported from Antigua for estates, one in St. George's and one in St. Andrew's parish.

139. Progeny of the Sussex bull have done remarkably well. Early maturity, good fattening quality and docility are the characteristics of the half-breeds. The breed was confined to the Southern part of the island but is now to be seen Eastwards.

140. Pigs and other small stock (poultry especially) are receiving more attention from the peasantry and a ready market is to be had in a neighbouring colony.

141. An African woolless stud ram was imported from Barbados for use in Carriacou.

Botanic Gardens and Plant Distribution.

142. Lawns at Botanic Gardens, Spout, Tanteen and Fort Rocks were maintained in creditable condition.

143. Fruit from the Gardens were sold through the Home Industries.

144. Plant distribution was as follows:—

Budded Oranges	57
„ Grapefruit	13
Grafted Mangoes	74
Limes	4159
Ornamentals	1422
Forest Seedlings	—
Seeds (Palm)	157
And in Carriacou:	
Grape Plants	250
Lime Seedlings	393
Cotton Seed	120

145. *Soya Beans.*—In 1910, 1913 and 1925 Soya beans were tried with little success. This year Soya beans (yellow variety) were again tried. The viability of the seed obtained was considered poor, but the plants which grew give promise sufficient to warrant the continuing the trial. Soil was inoculated with material obtained from the Microbiologist to the United States Agricultural Department.

Forestry.

146. The report of Agricultural Assistant Hagley, Forest Officer, will be found in Appendix E. of this report.

Revenue from the forests:

Nutmegs and mace	£71 10 10
Timber trees	7 17 2
Telephone poles	4 2 6
Vessel booms	19 0
	£84 9 6

147. Telephone poles supplied the Telephone Department, for which no payment was exacted, have a royalty value of £18. 15. 0.

Soil Erosion.

148. *Grenada.*—Generally speaking, soil erosion has not, as yet, reached alarming proportions in this island.

149. There are, however, certain districts within the red soil—basalt—areas which have shown considerable loss of surface soil due to sheet erosion. These districts are, in the main, on steep hillsides which have been cropped for many years with manioc.

150. On steep hillside areas where the soil type consists of red soils—augite or hornblende andesite,—erosion would seem to be minimised by the free growth of *Balizier* (Heleconia Bahai) and the class of crops—mainly bananas—grown on the soils.

151. Damage to cultivated land due to gullying is apparent under conditions where the headwaters of our rivers are not adequately preserved.

152. The catchments of many of these rivers have been denuded of its natural vegetal cover. During rainstorms, the feeders, which have their origin with such catchments soon become in spate with resultant damage to contiguous lands.

153. This source of damage was clearly demonstrated during the severe rainstorm of October, 1938. The urgency for steps to be taken to protect the head waters of the rivers and particularly those which supply pipe-borne water to the towns, etc., is very apparent.

154. The value of contour ridging and trenching, together with contour hedging with grasses, etc., has been stressed to the peasants in the cultivation of their crops.

155. Permanent cover, in the form of semi-forest crops such as cloves, cinnamon and pimento are recommended to the small land owners in the eroded areas, who will be supplied by the Forest department, as occasions warrants, with seeds and seedlings of these species.

156. *Carriacou.*—Active propaganda in pointing out to land owners, large and small, the effects of soil erosion, was undertaken, as well as the measures for checking soil erosion explained. On one estate the management took action by refusing to continue the renting of certain hillside lands and allowing them to revert to forest growth.

157. The experiment planned by Mr. J. B. Hutchinson, Cotton Adviser to the Commissioner of Agriculture, that permanent stands of perennial cotton in contour ridging may assist materially in conserving the soil has been laid down. It was observed that erosion was greater on the plots where the rows ran in the direction of the slope, but that erosion in all cases was still very obvious.

158. A scheme for demonstration plots in soil conservation was drawn up during the year and an allocation of £50 was provided in the Estimates for this work during 1939.

159. The scheme provides for three plots in Carriacou and one in Petit Martinique, situated in localities where soil erosion is most pronounced.

160. The methods to be adopted in these plots will be the planting of soil-binding grass in rows at intervals across the slope of the land; crops being cultivated between; the construction of silt trenches; terracing with stones if available on the land; and leguminous crops to occupy a prominent part in the cropping system.

161. Demonstration in filling and checking gullies formed from eroded drains by the construction of wood pile dams was undertaken in several places. The results were satisfactory.

Agricultural Education.

162. Mr. Lionel Alexis, Agricultural Instructor to the Education Department was responsible for school gardening and lecturing to the children of the primary schools.

163. Thirteen schools throughout the island maintained gardens for instruction and demonstration.

Legislation affecting Agriculture.

164. During the year the following were enacted :—

Ordinances :—

Sale of Produce—No. 3 of 1938.
Sale of Produce—No. 14 of 1938.

Statutory Rules and Orders:—

No. 1 of 1938 -Defining lime and lime products under Sale of Produce Ordinance—Gazetted 29th January, 1938.

No. 4 of 1938.—Declaring 'eye spot' of bananas notifiable under protection from Disease (Plants) Ordinance—Gazetted 26th February, 1938.

No. 5 of 1938—Fee for licence to purchase limes, lime juice and lime oil—Sale of Produce Ordinance.—Gazetted 26th February, 1938.

No. 6 of 1938.—Prohibition of the removal of lime plants, etc., to Carriacou under the Protection from Disease (Plants) Ordinance—Gazetted 12th March, 1938.

No. 13 of 1938.—Affidavit for Produce Sellers Book under Sale of Produce Ordinance—Gazetted 21st May, 1938.

No. 21 of 1938.—Proclaiming Sale of Produce Ordinance—Gazetted 8th June, 1938.

No. 30 of 1938.—Date of hearing of applications for licences under Sale of Produce Ordinance—Gazetted 23rd July, 1938.

No. 42 of 1938.—Prohibiting importation of *Thespesia grandiflora*, grapefruit and oranges under Plant Protection Ordinance—Gazetted 17th October, 1938.

No. 54 of 1938.—Dates of hearings for application for licences under Sale of Produce Ordinance—Gazetted December, 1938.

Visitors.

165. Hon. E. J. Wortley, C.M.G., O.B.E., Director of Agriculture; Dr. S. Sardeman, Director of Agriculture to the Netherland West Indies; Mr. G. A. Jones, C.M.G., Commissioner of Agriculture; Mr. C. C. Skeete, Assistant Commissioner of Agriculture; Mr. P. E. Turner, Sugar Cane Agronomist; Mr. A. Pickles, Entomologist; Professor C. Y. Shephard, Economist; Professor Hardy (Chemistry and Soil Science); Mr. J. B. Hutchinson, Cotton Adviser to the Commissioner of Agriculture; Mr. F. A. Squires, Cotton Pest Entomologist to the Windward and Leeward Islands; Mr. F. M. Bain, Citrus Specialist; Dr. Adamson, Professor of Entomology, Imperial College of Tropical Agriculture; Mr. Cope, Cacao Specialist; Dr. Rafael Roncallo of Colombia; Mr. G. Milne, Soil Chemist to the Amani Research Institute; Mr. W. A. Chamber of Maine, U.S.A.; Mr. Voeckler.

III.—REVENUE AND EXPENDITURE.

166. For summary of Revenue and Expenditure under departmental votes and for detailed financial statement see Appendix D.

APPENDIX A.

Quantity and Value of Exports.

The subjoined table of exports shows agricultural production for the years 1936, 1937 and 1938.

Product.	1936.		1937.		1938.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
Cacao ...	78,636 cwt.	£123,616	64,265 cwt.	£160,030	85,376 cwt.	£126,920
Nutmegs ...	27,738 ,,	61,617	39,153 ,,	105,264	32,269 ,,	74,625
Mace ...	5,187 ,,	42,077	6,454	61,895	5,078	38,995
Other Spices ...	17,785 lbs.	429	29,266 lb.	681	8,676 lb.	225
Lime Oil :						
Distilled ...	715 gal.	6,019	593 gal.	5,963	12,978 ,,	9,735
Handpressed ...	24½ ,,	367	6 ,,	95	—	—
Line Juice :						
Raw ...	—	—	—	—	6,026 gal.	475
Concentrated ...	—	—	3,280	436	1,160 ,,	87
Cotton Lint ...	2,502 cwt.	4,703	1,610 cwt.	3,873	2,055 cwt.	2,588
,, Seed ...	6,699 ,,	1,163	5,432 ,,	1,109	6,128	1,276
Bananas ...	155,568 stm.	13,238	151,610 stm.	14,650	106,426 stm.	11,134
Grapefruit ...	12,580	63	20,904	211	151 pkgs.	112
Oranges ...	79,350	148	200,055	251	130,100	177
Avocado Pears ...	26,020	31	110,120	134	348,425	361
Mangoes ...	32,600	51	7,200	8	25,500	28
Green Limes ...	150 brl.	73	28 brl.	19	24,500	14
Other Fruit ...	1,099 ,,	203	667 ,,	126	300 pkgs.	70
Coconuts ...	153,350	392	209,582 ,,	409	143,635	300
Copra ...	2,888 cwt.	1,653	5,386 cwt.	3,371	3,416	1,503
Livestock :						
Mules ...	—	—	5	54	4	50
Horses ...	35	796	8	172	4	32
Cattle ...	3	12	9	21	1	5
Sheep ...	256	80	522	369	763	260
Goats ...	759	212	1,466	184	2,233	534
Pigs ...	678	622	1,176	1,285	1,562	1,506
Asses ...	—	—	5	13	8	14
Poultry ...	7,260	416	16,452	797	9,732	486
Hides and Skins ...	95	71	174	130	153 cwt.	81
Miscellaneous ...	—	424	—	525	—	86
Sapodillas ...	—	—	—	—	60,400	48
		258,476		362,075		271,727

Exports of Cocoa, Nutmegs and Mace and their destination, 1938.

Country Exported to.	Cocoa.		Nutmegs.		Mace.	
	Quantity Cwt.	Value £	Quantity Cwt.	Value £	Quantity Cwt.	Value £
United Kingdom ...	41,659	65,419	10,622	20,166	3,320	26,647
Canada ...	29,982	42,733	2,391	4,905	460	3,001
New Zealand ...	200	442	—	—	—	—
Egypt ...	—	—	50	98	—	—
Australia ...	402	527	—	—	—	—
Jamaica ...	—	—	403	837	—	—
Trinidad ...	—	—	—	—	28	166
Barbados ...	20	21	1	1	—	—
British Guiana ...	39	54	12	12	—	—
South Africa ...	60	150	60	150	—	—
United States of America ...	1,874	2,342	20,855	44,466	870	6,387
France ...	99	168	—	—	—	—
Belgium ...	5,189	7,785	1,657	3,608	—	—
Holland ...	1,778	2,292	—	—	—	—
Germany ...	3,895	4,687	—	—	400	2,794
Poland ...	179	300	—	—	—	—
Dominion Republic ...	—	—	218	381	—	—
Total ...	85,376	126,930	32,269	74,625	5,078	38,955

APPENDIX B.

SUMMARY of the Principal Articles Imported into the Colony of Grenada classified according to Groups, during the years 1934–1938.

Articles.	Quantities.					Value.				
	1934.	1935.	1936.	1937.	1938.	1934.	1935.	1936.	1937.	1938.
CLASS I.—FOOD, DRINK, AND TOBACCO :						£	£	£	£	£
Beer and Ale gals.	5,739	8,597	7,328	12,079	9,222	1,331	1,988	1,611	2,473	1,929
Bread, Biscuits, Cakes, lbs	183,101	191,716	185,726	188,500	146,693	3,563	3,522	3,805	4,068	2,811
Butter and Butter Substitutes :										
Butter lbs.	55,688	66,623	81,708	77,040	76,457	2,694	3,328	4,186	4,297	4,849
,, Substitutes ,,	133,874	123,566	141,428	162,302	158,374	3,414	2,958	3,133	3,513	3,054
Cattle and other animal foods lbs.	88,861	96,033	114,590	147,648	104,500	383	395	426	688	504
Cheese ,,	25,721	26,851	28,828	31,937	26,442	844	933	1,098	1,281	1,080
Coffee ,,	6,895	7,291	7,952	9,894	8,086	239	194	195	509	255
Confectionery value	...	...	...	...	...	1,374	1,333	1,894	2,047	1,333
Fish of all kinds :										
Canned or preserved in jars or bottles lbs.	13,147	26,354	28,194	49,938	24,624	427	811	810	1,502	831
Salmon, Trout and Mackerel lbs.	157,594	73,332	94,822	96,335	129,668	964	600	729	812	1,185
Other kinds ,,	727,800	931,171	1,067,248	967,975	1,026,965	8,583	9,836	9,797	11,735	10,628
Grain & Flour, Pulse and preparations thereof :										
Grain :										
Corn (maize) lbs.	69,444	181,602	51,887	128,355	182,575	324	660	191	493	859
Oats ,,	211,444	220,835	225,899	237,840	213,067	838	906	938	1,283	1,045
Rice ,,	2,045,487	2,215,434	2,767,070	2,807,389	2,942,323	8,646	9,861	10,978	12,278	13,163
Flour and Meal :										
Flour (wheaten) ,,	6,546,376	6,700,651	7,217,063	7,014,651	7,391,079	31,171	29,658	37,647	45,739	39,332
Cornmeal (maize meal) ,,	60,871	49,626	54,208	89,527	85,579	305	245	243	428	434
Pulse :										
Beans, Peas Lentils ,,	110,688	145,237	185,724	171,700	234,012	773	887	1,126	1,206	1,588
Lard and Lard Substitutes ,,	160,735	172,989	197,695	202,424	222,169	2,721	3,292	3,710	4,116	4,135
Meat :										
Salted, pickled ,,	142,483	141,366	137,264	159,139	160,524	2,281	2,595	2,645	3,224	2,991
Smoked or cured including Bacon and Hams ,,	30,767	31,314	35,640	38,367	37,267	1,509	1,615	2,549	1,856	1,951
Milk Condensed ,,	54,250	58,203	91,691	148,733	149,093	1,096	1,017	1,508	2,340	2,344
Oils :										
Edible gals.	14,049	14,158	14,576	17,908	17,581	2,070	2,492	2,804	3,680	2,872
Olive ,,										
Salt :										
Coarse tons	770	460	402	507	492	1,906	789	610	585	212
Spirits :										
Gin gals.	339	318	316	460	352	250	194	194	272	213
Rum ,,	2,033	1,920	2,082	2,381	1,607	952	766	737	840	596
Whisky ,,	1,288	1,723	1,702	2,435	2,107	1,941	1,803	1,888	2,574	2,279
Sugar :										
Unrefined lbs.	1,721,776	1,542,595	80,812	10,220	232,285	7,731	6,513	354	49	960
Refined ,,	705,814	893,529	891,077	789,175	653,567	3,356	3,918	3,997	4,089	3,144
Molasses & Syrup gals.	160	...	...	82	121	6	...	...	29	50
Tea lbs	5,390	6,262	6,945	6,292	7,119	529	627	671	615	686
Tobacco and Snuff :										
Unmanufactured ,,	38,881	38,444	42,432	43,893	46,142	962	1,033	1,044	1,157	1,363
Cigarettes ,,	8,337	10,519	11,963	13,375	13,496	2,463	2,673	2,957	3,282	3,216
Other kinds ,,	6,614	6,271	7,038	7,669	6,863	2,093	1,980	2,389	2,416	2,179
Vegetables :										
Onions and Garlic ,,	123,030	134,563	155,564	188,485	202,093	599	817	921	1,189	1,342
Potatoes, &c. ,,	124,751	164,040	98,248	113,082	113,406	476	578	442	501	492
Wine :										
Still gals.	7,908	7,801	8,313	14,103	9,830	1,562	1,853	1,769	3,104	2,120
Other Articles ...	...	...	...	...	...	5,055	7,039	6,585	8,841	8,908
Total Class I. ...	...	...	...	...	...	105,431	109,709	116,581	138,911	126 93

ANNUAL RAINFALL RETURNS—1938.

No.	Observation Station.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total.	Maximum in one day and date.		No. of days on which rain fell.	Locality.
		Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Date.	Ins.		
1	Annandale ...	9·93	7·19	9·94	9·34	10·78	12·57	20·11	21·02	20·94	20·39	39·69	15·56	197·49	Oct. 27	9·20	265	S. W.
2	Belair Park Carriacou ...	2·42	1·12	1·44	2·91	6·67	10·30	7·98	5·91	11·10	5·83	16·95	6·66	79·19	July 7	3·68	174	N. W
3	Belmont, St. Patrick's...	2·83	1·77	2·17	3·58	4·30	5·26	6·19	8·22	10·37	16·32	18·73	7·85	87·59	Oct. 27	3·70	201	N. E.
4	Belvidere ...	14·57	5·87	11·85	14·03	6·07	12·79	20·10	27·48	41·28	13·87	59·76	21·56	249·23	Nov. 20	8·00	311	Central.
5	Boulogne ...	5·39	2·65	3·70	4·61	4·31	8·49	12·09	12·47	13·58	14·82	30·93	8·52	121·59	Nov. 21	7·72	254	N. E.
6	Brothers ...	9·42	5·03	7·14	8·28	7·69	12·28	17·06	17·59	21·19	13·33	34·82	14·68	168·51	Nov. 20	4·42	263	W.
7	Crayfish ...	4·45	2·63	5·25	4·55	6·37	7·70	8·48	14·15	20·31	7·65	24·58	10·60	116·72	Nov. 20	5·00	278	N. W.
8	Dougaldston ...	9·03	4·22	6·25	5·71	6·99	13·94	17·44	19·70	21·87	17·41	34·86	13·65	171·07	Nov. 20	5·17	288	N. W.
9	Dunfermline ...	4·83	2·19	2·90	4·50	2·74	8·86	12·24	6·60	12·33	13·77	27·43	7·46	105·85	Nov. 21	5·27	183	E.
10	Florida ...	12·08	6·98	8·51	8·79	8·57	13·28	17·66	16·87	25·53	16·80	35·48	15·42	185·97	Nov. 20	4·46	272	W.
11	Grand Anse ...	2·19	·77	1·34	2·84	2·70	6·06	8·78	6·54	10·93	14·39	13·29	4·63	74·76	Oct. 27	5·05	136	S. W.
12	Grand Bacolet ...	4·56	2·71	4·78	4·91	6·04	9·17	10·60	9·42	10·40	12·52	33·52	6·78	115·41	Oct. 27	6·50	245	E. central.
13	Grand Etang ...	10·90	11·17	9·01	13·61	10·80	15·50	19·26	22·07	23·12	15·37	57·11	38·21	246·43	Nov. 20	9·24	324	Centre.
14	Gunton ...	3·67	2·78	4·65	4·58	5·81	8·31	9·17	12·62	15·95	9·67	19·90	8·16	105·27	Nov. 21	4·55	289	N.
15	Hope ...	4·97	2·39	3·65	4·17	4·85	9·87	10·45	11·60	10·67	12·26	32·91	7·48	115·27	Nov. 21	7·21	253	E.
16	Maran (Upper) ...	7·60	4·90	5·21	7·23	5·53	11·53	14·02	17·44	19·36	12·33	33·28	11·93	150·36	Nov. 21	3·70	254	W.
17	,, (Lower) ...	8·10	4·39	5·81	6·60	5·43	12·79	14·79	15·48	18·29	11·14	33·95	9·24	146·01	Nov. 6	2·87	235	W.
18	Marli ,, ...	2·51	1·55	3·86	2·57	5·66	7·44	6·86	9·92	11·33	8·04	16·89	7·33	83·96	Nov. 20	5·00	235	N.
19	Nimganfoix ...	7·34	4·76	5·20	7·21	4·86	10·91	18·37	18·42	22·72	19·00	47·41	8·53	175·33	Nov. 17	7·05	287	Central.
20	Pearls ...	3·17	1·90	3·19	2·51	2·12	6·68	9·75	9·20	8·75	9·94	26·28	6·20	89·89	Nov. 22	7·53	129	E.
21	Plaisance, St. Patrick's	5·06	2·10	5·73	6·50	6·71	9·72	9·61	15·31	14·65	13·15	32·65	10·15	141·37	Nov. 20	6·82	153	N.
22	,, St. John's ...	12·05	8·16	9·61	11·97	9·30	12·76	16·15	18·55	23·64	15·44	36·75	16·26	190·64	Nov. 20	4·96	311	W.
23	Point Salines ...	3·80	2·95	1·60	·20	5·75	12·27	11·35	5·35	12·27	5·70	13·70	9·20	84·14	Dec. 22	5·55	133	S. W.
24	Richmond Estate ...	5·67	1·42	4·58	5·00	4·63	11·46	12·72	13·64	14·69	14·04	37·53	9·37	223·75	Nov. 21	7·05	307	E. central.
25	Richmond Hill ...	5·84	2·04	4·18	7·84	12·91	8·73	10·83	13·60	13·57	13·10	14·47	9·17	116·38	Oct. 28	2·06	252	S.
26	Samaritan ...	4·36	2·37	5·42	5·91	7·20	8·73	8·86	13·67	18·13	9·00	27·83	9·81	121·39	Nov. 20	6·71	279	N. W.
27	Victoria ...	4·78	3·44	5·37	5·81	6·28	10·64	12·81	13·99	22·34	13·35	29·74	9·43	137·98	Nov. 21	5·53	273	N. W.
28	Woodlands ..	3·48	1·44	2·78	3·72	4·28	13·67	12·68	9·64	18·32	18·75	24·84	6·38	119·98	Oct. 28	8·00	213	S.

APPENDIX D.

FINANCIAL STATEMENT.

Expenditure.

1.	Personal Emoluments	£	2,131	6 8
2.	Contingencies		19	19 9
3.	Labour		600	17 0
4.	Seeds, Fertilizers, Tools, etc.		127	8 2
5.	Travelling		559	5 11
6.	Expenses of Visiting Officers		159	4 3
7.	Maintenance of Animals		5	1 11
8.	Maintenance of Government Lands		100	0 11
9.	Maintenance of Government House Grounds ...		...	
10.	Plant and Animal Diseases		163	6 9
11.	Publications and Books		13	4 5
12.	Forest Preservation		79	5 11
13.	Expenses for Officers Refresher Course ...		...	
14.	Expenses of Delegate to fruit, etc., Conference ...		15	0 0
15.	Purchase of Jagger Shock-Recorder		...	
16.	Improvement of Live-Stock		47	5 10
	Total	£	4.021	7 6

Revenue.

	Grenada—Plant Sales	£	35	15 1
	,, Sale of Live Stock		10	0 0
	Carriacou—Plant, &c., Sales		17	4 9
Forests—	Grenada		84	9 6
	Carriacou		3	6 4
	Total	£	150	15 4

APPENDIX E.

REPORT ON FOREST WORK FOR THE YEAR 1938.

Introduction.

The year under review marks the second year that Forestry was placed under the control of the Agricultural Department.

2. The work of any Forest Department, it may be stated, exists primarily for the purpose of managing the Forest Reserves of that colony or country for the benefit of the community in general.

3. In our previous report it was stated that the Reserves had been maintained primarily for protection purposes and the management had been guided by a scheme for their economic development.

4. On this score, it will be noted in the body of this report that considerable improvement in the revenue from the forest has accrued primarily from the development of one of its minor products—nutmegs and mace.

5. The vote for Forest Protection for the year 1938 was increased by £20. This small increase permitted an extension of forest inspection paths and it is now possible to inspect most remote parts of the Reserves with little difficulty.

6. With the exception of small extensions to the Mon Repos and the Mt. Sinai catchments involving the acquisition of 30 acres and 25 acres respectively, the Forest Area remains much the same.

7. Attention may be drawn to the denudation of certain areas around Azima and Black Forest which form the catchments of the streams supplying pipe-bourne water to the town and district of St. George's. The control or acquisition of these areas by Government would seem to call for early attention.

8. The need for a map showing the position, area and physical importance of the forest reserves of the colony is still outstanding.

Forest Reserves.

9. During the course of the year a composite area, containing 55 acres and 20 poles of land, was acquired by Government for the extension of the Mon Repos–Soulier and the Mt. Sinai catchments. It will still need, however, the further acquisition of some 250 acres of land to complete the protection and reforestation of the Mon Repos–Soulier Catchments.

10. The forest areas as they exist today are approximately as follows:—

Name of Area.		Acres.	Rds.	Poles.
Grand Etang Reserve *	...	2,484	3	14
Mt. Sinai Catchment	...	275	3	21
Soulier–Mon Repos Catchment	...	47	3	27
St. Germaine Reserve	...	34	3	35
Land Settlement Reserves	...	21	2	24
		2,865	1	1

Protection of Forests.

11. Illicit fellings were recorded in three sectors of the reserve involving the cutting of six marketable species—2 maruba and 4 laurier. Raids resulting in the capture of three pit saws were affected in the first two cases of trespass. Cutting of small wood was also recorded in some of the Land Settlement Reserves.

12. Several slides of minor importance, in various sectors of the reserves, were caused by the heavy rainstorm which prevailed during the month of October last.

13. There is little damage to record as a result of either disease and pests or fire.

14. Foot paths, covering a mileage of some 20 miles, have been established for the inspection of various forest areas. Patrols have been greatly facilitated by this means and the committal of forest offences greatly minimised.

15. The annual cutlassing and clearing of traces which delimit the reserves were effected during dry months of the year—March–April.

16. At the March meeting of the Forestry Board, it was decided that, in the interest of authority and to facilitate the handling of any case of trespass, Forest Guards should be enrolled as Rural Constables.

Forest Management.

17. Owing to the great mixture of species found to the acre, in the Reserves, a large number of which are non-marketable or of poor economic value, little can be done in the line of management as regards to either the control of the yield of species or the improvement of the existing growing stock.

18. Selective or here-and-there fellings involving such species as maruba, olivier and laurier sp. indicate that a high percentage of these trees have over-reached their exploitable age and decadence, revealing itself in over-ripeness and decay of the central portions of the boles, is highly evident.

19. Exploitation of these species with the regeneration of the areas around the stumps of the felled trees with suitable marketable species, therefore, plays a very important part in the immediate management of the forest.

20. The areas, with such minor crops as nutmegs, are being maintained and improved under the present scheme of management. Both production and revenue from this source have shown considerable increase during the year.

* This does not appear to include Meveaux, Gomier and Retreat and possibly Aird Lot—See M.P. 1625/20.

21. It may be broadly stated that the line of management indicated for the control of the forest lies:—

(*a*) in the immediate exploitation of marketable species which have reached the exploitable age and have or are bordering on the age of decline;

(*b*) the maintenance and development of minor crops;

(*c*) the gradual conversion and regeneration of suitable and convenient areas with local commercial species;

(*d*) and with all, while remembering that our reserves are maintained primarily for protection reasons, it is well to recognise the fact that these forests of protection, must be so managed that, in time, there need not be a total burden on the finances of the colony.

Utilisation and Research.

22. Several species of local timber were supplied to private enterprise, as well as to various Government departments with a view to testing out their suitability to the specific work for which they were applied.

23. Species being tested are as follows:—

(*a*) Bois Gris (Licania Ternatensis) for marine and fresh water piles;

(*b*) Mahoe Cochon (Sterculea sp.) for lighter oars and masts for small craft; and

(*c*) Bois Gris and Zaboca grand feuille (Richeria grandis) for telephone poles.

24. Another local species, Andira sp., was converted and used for telephone cross arms. Several lengths of gommier (Dacryodes hexandra) were supplied Government for making rafts for use in connection with the deep water pier.

25. Applications for the purchase of trees by local woodcutters showed considerable decline during the year, as the Revenue statement would disclose.

26. Efforts are being made to identify the Laurier species. Some seven individuals carrying local names are recognisable. The converted material of this species would seem to have a wide range of usefulness, being used locally for boards, scantling and shingles. The wood is durable and easily worked. Laurier sentir, a close relative of the Demerara greenheart, is very durable and resistant to termites even when in direct contact with the soil.

27. Investigations, to determine the suitability of various barks as a tanning agent, are being made in the interest of the local leather industry. The barks of two species of serette (Brisonima spp.) and Zaboca grand feuille (Richeria grandis) seem to have a relatively high percentage of tannic acid. These species are suitable for conversion into constructural material, and the sale of the bark for tanning purposes would greatly enhance the value of these trees.

Financial.

28. The vote for Forest Protection for the year was increased from £60 to £80. The increase was mainly absorbed in the establishment of nurseries.

29. While revenue from nutmegs showed an increase of approximately 100% over that of last year, production has also risen to the extent of a little over 300% for the same comparative period. The price level for this crop was exceedingly low during the crop year 1938.

30. Comparative Statements of Revenue for the years 1937 and 1938 are as follows:—

Product.	1937.	1938.
Nutmegs and Mace	£ 35 18 9	£ 71 10 10
Timber trees	19 10 0	7 17 2
Telephone poles	1 16 0	4 2 6
Booms for vessels	...	19 0
	£ 57 4 9	£ 84 9 6
Royalty value of 150 'phone poles supplied Telephone Department	...	18 15 0
	£ 57 4 9	£103 4 6

Administration.

31. The Forestry vote for the year 1938 consisted of £80 for protection purposes, £187 for salaries, and £40 travelling allowance for the Ranger.

32. During the course of the year several changes were made in the personnel of the staff—the writer was made Forest Officer; Daniel Radix appointed Ranger; Solomon James retired and was succeeded by Samuel Daniel; and Charles Livingstone, relieved of office in the interest of economy.

33. The personnel of the staff is as follows:—

W. H. Hagley	...	Forest Officer
Daniel Radix	...	Ranger
Robert Garraway	...	Senior Guard
Samuel Daniel	...	Guard
Vannie Honorè	...	Part-time Guard-Catchment areas.

General.

34. In the interest of soil conservation and as a means of protection for the headwaters of the streams which supply potable water through the Soulier and Mon Repos dams, it would seem urgent that Government consider the acquisition of the areas which constitute the catchments of these streams.

35. Erosion, in both forms, sheet and gullying, together with continuous denudation of the vegetal cover, in a process of shifting cultivation, persists within this area. The area involved is contiguous to the South-Western end of the Grand Etang Reserve and occupies an area of some 250 acres in extent.

36. A large number of clove and pimento seedlings have been grown during the course of the year for free distribution to peasant proprietors—preferable in the Red Soil areas—in an effort to reduce erosion by establishing such semi-forest crops on the steep hillsides of their holdings.

37. Preliminary work for the establishment of an arboretum and sample plots for measurement of rates of growth and the study of the silvicultural requirements of the various species has been considered.

(Signed.) W. H. HAGLEY,
Forest Officer.